

undesirables tend to be markedly cosmopolitan and deficient in national sentiment.' On the strength of this confusion, he proposes to exclude from his self-segregating groups all who are not descended from "the indigenous population of the British Islands," and declares "racial segregation" to be "an obviously valuable eugenic measure" which "has been practised by the Jews for thousands of years with the greatest success" (p. 318).

All these contentions would appear to be simply bad science. Even granting that when he speaks of the 'English race' he probably means the 'Nordic,' it is quite untrue that the Nordics have ever been the only inhabitants of these Islands, or that 'racial purity' can be exemplified in any actual population anywhere on earth. The Jews are certainly not a case in point: they exhibit a considerable proportion of Nordic types, derived, perhaps, from the 'Pelasgian' Philistines, and appear to have adopted their 'Armenoid' and un-Semitic noses from the Hittites. Nor is it scientifically at all 'obvious' that a 'pure' race must be superior to a mixed. The Mendelian law of segregation of hybrids does no doubt provide a means of undoing the effects of a crossing; but it provides also for the establishment of hybrid races superior to *both* their ancestral stocks. And it may be suggested that it is in this direction of combining excellences now never found together, rather than by preserving a mythical purity of race, that the chances lie of cultivating the existing types of man (like those of plants and animals) into a really superior 'race.' Provided always that we know what points to breed for and wherein real superiority consists; or rather, that we are willing to learn this from experience. This may be a long and arduous process, full of surprises for those who imagine that they are now in a position to dogmatize; but science has no prejudices, and is international. In spite, however, of these defects, or even, perhaps by reason of them, Mr. Freeman's book should afford an excellent basis for eugenical discussion.

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**Pearl, Raymond.** *The Relative Influence of the Constitutional Factor in the Etiology of Tuberculosis.* Reprint from *American Review of Tuberculosis*, Vol. 4, No. 9., Nov., 1920. Pp. 688—712.

THIS paper gives some preliminary results of an extensive investigation, which was begun two years ago in Baltimore, into the problems of the etiology of tuberculous disease. So far, it appears, the family histories of some 57 persons, tuberculous and non-tuberculous, have been carefully examined, involving some 5000 blood relatives. The results, up-to-date, go far to show how very complex is the question of the relative importance of the various factors.

It was natural that after the discovery of the bacillus, the mere dissemination of the microbe should have been regarded as the main element in the effective spread of the disease, for, without the microbe, the disease does not exist. But, since then, the importance of other factors has been again brought forward,—notably by Bulloch and Greenwood in 1911—which had already been dwelt on long before Koch's discovery. These factors are environment (apart from actual

infection) and inherited constitution. Pearl's inquiry mainly deals with the latter; but it has been found difficult or impossible to disentangle heredity from infection, as they are so closely interlaced.

We begin with the fact that most people have received doses of tubercle at some time of their lives,—generally very early. In only a small proportion of these does active tuberculosis manifest itself. This result does not appear to be largely determined by external conditions of life. Hence we are driven to consider the part played by internal constitutional qualities.

Now Pearson obtained figures which showed in phthisis as close a correlation between parent and offspring, as in eye-colour or deaf-mutism. This suggested an enormous influence of inherited tendency; if it were a simple case of infection, there should be—which there is not—a similar correlation between husband and wife. (? Are not infants vastly more susceptible?).

But neither is the case for hereditary constitution simple. For in almost every case there is a high probability of familial infection.

From the data of this paper, it appears that of any two persons, one tuberculous and one not, the tuberculous will have *six* times as many tuberculous relatives (ascendants or descendants) as the non-tuberculous. This again at first sight, throws all the weight on to inherited constitution; for as tuberculosis in ancestry increases, so also it does in offspring. But the tuberculous are found to have been in far closer contact with other actively diseased persons than the non-tuberculous; in fact, the rate of "close-contact" increases more rapidly than the rate of incidence. On the other hand, in any given tuberculous family, closeness of contact by no means determines active disease.

The problem of course is full of pitfalls, and one hopes that this investigation, which will not be complete for some years, may give more light.

In the matter of phthisis the practical progress of the last 30 years has been disappointing; in spite of sanatoria, the actual decrease in the phthisis death-rate has not been as great as in the previous 30 years, and it is tending to become stationary.

The paper contains some interesting figures on the rise of tuberculosis in the newly settled parts of Canada; also concerning the pronounced differences in susceptibility to tuberculosis of immigrants from different European countries to America, those from Ireland showing the highest, those from Italy the lowest mortality.

How colossal is our ignorance! Let us hope that investigators will not be content to fight each other about the *relative* importance of "seed and soil"; both are as necessary factors in the growth of tuberculosis as they are of potatoes, but their importances are of different kinds, and cannot be reduced to a common term. There would appear also to be some danger of the third factor—environment, climatic and otherwise—being entirely lost sight of; we all recognise, in dealing with patients and friends, that it plays some part; its rôle may be a minor one; it has certainly been exaggerated hitherto in the popular mind; but it has a place.

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